Contrastive Explanation and the Many Absences Problem

Forthcoming in *Synthese*.

Contrastive Explanation and the Many Absences Problem

Jane Suilin Lavelle (University of Edinburgh),
George Botterill (University of Sheffield),
and Suzanne Lock.

0. Introduction

Explaining events by reference to something which did not happen is common in our daily explanatory practice. The world, it seems, is full of the consequences of things which did not happen and things that were left undone. The wound became septic because it was left untreated. The building succumbed to dry rot because maintenance was neglected. The child suffered because she was not removed from an abusive home. The milk went off because Clover forgot to put it back in the fridge. Fred lost his finger in the machine because the safety catch was not deployed. In cases like these we accept the lack of treatment, the neglect of maintenance, the non-removal of the child, Clover's omission to return the milk to the fridge, and the failure to engage the safety mechanism as explanatory for the outcomes under attention. So it clearly is the case that we do accept absences and omissions as explanatory.

But this raises an important question, namely, which absences are explanatory? And why should some be explanatory while others are not? For whilst we may accept that the milk went off because Clover did not put it back in the fridge, we would be unwilling to accept an explanation which claimed the milk went off because the Queen did not put it back in the fridge, or because trained Rhesus monkeys were not there to put it back in the fridge. That we do not accept these explanations can seem puzzling: had it been the case that Clover, or the Queen, or anyone else had put the

milk in the fridge, then the milk would not have gone off. So why is it the case that we accept Clover's failure to put the milk in the fridge as explanatory, and not the fact that neither the Queen nor anyone else put it back either? We will call the problem of ascertaining which absences are explanatory 'the many absences problem', because it is concerned with determining which absence, out of an indefinitely large number of absences, is explanatory.

The many absences problem has been somewhat overshadowed in the philosophical literature by the debate about whether absences can be causal. The real problem, one might think, is to see how the absence of something can play a causally efficacious role. Any suggestion that absences can be causes runs up against a stubborn metaphysical conviction that nothing can come from nothing. For how can an omission or an absence, being the lack of something, be anything more than nothing? In this paper we will try to remain as non-committal on this issue as it is possible to be while tackling the problem of the explanatory value of absences.

One might doubt this is possible, on the grounds that there ought to be some systematic relationship between 'x caused y' and 'y is causally explained by x'. Often these claims could be treated as nearly synonymous, both equally expressed by saying 'y because of x'. In psychology the well established terminology of 'attribution' fudges any distinction between the cause-effect relation and causal explanation, by classifying all of 'x caused y', 'y because of x', and 'y is explained by x' as cases of causal attribution of y to x.[1] Meanwhile in philosophy David Lewis (see in particular Lewis (2000)) clearly took what we are calling the many absences problem to be the main issue at stake in the question as to whether absences can be causes.

We intend to offer our main contribution to the debate about whether absences can be causes elsewhere. It seems to us that the line we take here on the explanatory status of absences will tolerate more than one stance in that debate. Here we will be arguing that absences are explanatory when they meet the criteria set by the contrastive model of explanation, as applied to particular contexts. However, we will have to make a significant adjustment to previous versions of the contrastive model in order to enable it to accommodate absences.

1. The many absences problem

At the heart of the many absences problem is the question of how we can discriminate between explanatory and non-explanatory absences. This section will briefly review two other attempts at handling the problem, as provided by: the deductive-nomological model of explanation and a counterfactual account. Neither holds out much hope of providing a satisfactory solution.

One way of addressing the problem is to look at existing models of explanation to see how they cope with it. The deductive-nomological (D-N) model is as good a place to start as any. The D-N model claims that a good explanation of an event is one that shows how, given the facts of the situation and the laws of nature, one could have expected it (Hempel (1965, 337)). With regard to why certain absences are explanatory, a proponent of the D-N model would claim that the absence of an event explains the target event if, and (give or take a few qualifications) only if, the laws of nature predict that we should expect the target event in the absence of the explanans event. For example, we could predict that a plant will turn yellow in the absence of sunlight by pointing to the laws of nature concerning sunlight and photosynthesis. The

absence of sunlight is explanatory because we expect it to have a particular effect on a plant.

But this does not solve the many absences problem. For the D-N model does not explain why we consider the absence of sunlight to explain the yellowing effect on the plant when the absence of artificial light would also have that effect, as would the absence of light from a star with similar properties to our sun. We would expect, by inference from covering laws, the plant to remain green if either of these latter conditions obtained. There seems to be nothing about the laws of nature and how they interact with situational factors that can help us to discriminate between explanatory and non-explanatory absences. The D-N model, therefore, does not appear to have the resources to solve the many absences problem.

One reason why this is so is that scientific explanations usually try to explain different things from ordinary, everyday explanations. Wrinkling our noses, we ask Clover, 'Why did the milk go off?'. 'Well,' she replies, 'even after pasteurisation has killed off most of the bacteria in the milk lactobacilli still survive. At room temperature these lactobacilli grow rapidly, converting lactose into lactic acid.' But of course we knew that milk goes sour if not kept chilled, even if we did not know the explanation for that general phenomenon. There may very well be a D-N explanation for such a phenomenon, giving its boundary conditions (e.g., in terms of temperature). Omissions will often be failures to prevent the occurrence of some general phenomenon. So a D-N explanation may very well be *relevant* to an explanation by absence or omission.[2] There are also cases in which absences can all be classified in a nomological way by abstracting away from any particular absence, as when we say that the weightlessness of astronauts is due to the absence of any contact forces, or

that some object continuing in a state of uniform rectilinear motion is due to no net external force acting upon it. In cases like that we do not face a 'many absences problem' (unless in connection with the content of a *ceteris paribus* clause) because there is no explanatory attribution to any absence in particular, but only to the absence of some quite general kind of factor.

Another way of addressing the many absences problem is through the use of counterfactuals — even though one might fear that this standard philosophical stratagem may come to nothing more than obscurum per obscurius, tackling a problem by providing an analysis in equally problematic terms. As we have seen, simply saying that the absence of A is explanatory if, had A occurred, then the explanandum would not have occurred, does not match our intuitive judgements about which absences are explanatory, since far too many absences will thereby qualify.

Someone relying on an appeal to counterfactuals might follow Lewis (2000) in so befriending absences as to allow that they — all of the uncountably many of them — do really qualify as explanatory causes, but then try to find some reason of a conversational or contextual character as to why most of them would be out of place in our explanatory practices. Anyone taking this line would be highly permissive about explanatory absences, but would then go on to urge that it is unseemly, inappropriate, or otherwise infelicitous to acknowledge ('mention') all but a very few of them. We want to stress that this view is quite different from ours, even though it might appear to yield similar results and invoke some of the same contextual factors. The similarity in results is only to be expected, since we have much the same body of data to draw on as to the sorts of absences that are judged to be explanatory. We also

agree with the Lewisian approach that what explanations we will accept is something which is heavily dependent upon conversational interests and contexts. But since we take an erotetic approach to explanation — seeing explanations as answers to why-questions — we take it that those factors of context and conversational interest have already been factored into the inquiry, in such a way as to allow only some responses to be properly explanatory. We will say more about this in section 4 below.

Alternatively, somebody who wants to stick to a counterfactual account of causal explanatoriness, without adopting such a permissive line on causal absences as Lewis did, might offer a more sophisticated counterfactual condition along the following lines:-

The absence of A is explanatory if and only if:

> (1) the absence of A violates our expectations, or is abnormal, or some such…; and
>
> (2) had A occurred, then the explanandum would not have occurred.

Now, of course, it is not possible to provide a refutation of every possible form such a counterfactual condition could take. It might be thought that some version of the counterfactual condition holds out hope of dealing adequately with the problems posed by both the milk and plant cases. Thus, the absence of the Queen putting the milk in the fridge is normal (at least in the sense that it would be unexpected and surprising if Her Majesty were to come and do that chore for us), whereas the absence of Clover putting the milk in the fridge is not; and the absence of a star like our sun shining on the plant is normal, whereas the absence of our sun shining on it is not. But further reflection shows that it is unlikely that some such revised form of

counterfactual condition will do the work which we need it to. As we have noted, clause (1) is not so much a single refinement of the counterfactual condition as a dimension of possible refinements which can be explored by a counterfactualist research programme. We would suggest that such a research programme is likely to become mired in diminishing returns. Even if some such counterfactual formula was successful in evading counterexamples, we would be disinclined to regard it as offering a satisfactory account of causal explanatoriness. For the explanans factor cited would not be causally explanatory because it satisfied the counterfactual condition. We would rather suppose that it was because it was causally explanatory that it satisfied such a condition.

Suggestions as to how condition (1) in a counterfactual account could be formulated are nonetheless of interest to the pragmatics of explanation. Thus, for example, what determines the normality of a particular action in the folk cases of intentional action seems very often to be connected with our notion of responsibility. We want to say that Clover has a responsibility to put the milk in the fridge, but that the Queen does not. When Clover does not fulfil her responsibility then we can point to her failure as explanatory for the event in question. Because the Queen does not bear this responsibility then we do not regard her omission as explanatory. We expect people to fulfil their responsibilities, and when they fail to do so we explain the subsequent events in terms of that failure — the failure being treated as abnormal, even if such failures are quite common. Explanatory causal attribution of this kind seems to be a sort of blame-game, played out upon a field of acknowledged or supposed social responsibilities.

However, it is clear that any account which attempts to limit the pragmatics of explanation to considerations of that sort is going to be too limited. In the first instance a satisfactory account should also be able to deal with absences which are not omissions. Even in the case of omissions, criteria of expectedness and responsibility are going to be too narrow, as Beebee has argued (Beebee (2004, 294)). We think there is a very good reason for this, namely that the pragmatics of explanation are question-relative: they depend upon a particular explanatory inquiry, whether a why-question has been voiced or is merely held in mind by someone trying to provide an explanation. The importance of this is that explanatory pragmatics are flexible and subject to control. So while one can default — as we usually do — to relying upon a background of standard expectations, customary responsibilities, and what normally happens, there is scope for pursuing unusual and inventive explanatory inquiries. Turning to the contrastive model, the mainstay of the erotetic approach to explanation, will help us see how this is possible.

2. The contrastive model of explanation: Lipton's version

Why did Bob fly to Paris?

There are a number of ways in which one could understand this interrogative. Indeed, it seems to us that it only becomes a particular question if understood, in context, in a particular way. One might want to know why Bob flew to Paris rather than taking the train. Or why Bob flew to Paris rather than to some other destination. Or why Bob flew to Paris rather than someone else flying to Paris. How the question should be answered depends upon the alternative against which you are contrasting the fact that Bob flew to Paris. This distinctive feature of why-questions has been pointed out by several philosophers,[3] leading to the development of the view that answers to why-

questions are contrastive explanations. According to the contrastive model of explanation, an explanation should account for why one thing rather than another occurred.

Following Lipton, who offers one of the best known and most explicit accounts of contrastive explanation (in Lipton (1991; 2nd edn. 2004)), what occurs has been referred to as 'the fact' and what did not occur, against which the fact is contrasted, has been called 'the foil'. Explanations should show why the fact rather than the foil occurred, by pointing to a difference in the causal histories of the fact and foil — the difference which accounts for the fact occurring rather than the foil. Lipton called this requirement 'the Difference Condition', stating it as follows:

> "To explain why P rather than Q, we must cite a causal difference between P and not-Q, consisting of a cause of P and the absence of a corresponding event in the history of not-Q." (Lipton (1990, 256))

So according to the contrastive model of explanation, an explanation must show why the fact rather than the foil occurred by citing *a difference maker*, namely something present in the causal history of the fact and absent in the corresponding history of the foil, to which the difference between fact and foil is attributable.

There are two types of contrast which can occur in a contrastive explanation: compatible and incompatible contrasts. Incompatible contrasts occur when the occurrence of the fact precludes the occurrence of the foil, as in the question 'Why did my plant die [fact] rather than remaining alive [foil]'. The death of the plant obviously precludes its survival, and this factor is something which the difference condition cited in the explanation must take into account. The explanatory difference condition must reveal the causal factor that led to the plant's death and prevented its survival.

Compatible contrasts occur when the occurrence of the fact does not preclude the occurrence of the foil. One can ask 'Why did Neil rather than Mary get food poisoning?' Neil's getting food poisoning does not preclude Mary getting food poisoning, because they could both have suffered from food poisoning. When people ask questions involving compatible contrasts, it is usually because they expected both the fact-event and the foil-event to occur. If you knew that Neil and Mary dined at the same restaurant, and that they both ordered the same meal, then you would be surprised that only Neil got food poisoning. In the case of a compatible contrast the explanation must cite a difference in the causal histories of the events which made the difference between the fact occurring rather than both the fact and foil occurring.

There are also cases where the contrast one has in mind is that between the fact occurring and not occurring, that is, where the foil is the non-occurrence or non-obtaining of the fact. One could ask 'why is the flagpole 12m high?' where the foil is 'rather than some other height'. These 'global contrasts' (Lipton (1990, 261)) require an amended version of the difference condition. This is because the fact is not being contrasted against a specific foil but against some possible states of affairs which would constitute a negation of the fact: one is not asking 'why P rather than Q' but 'Why P rather than not-P'. Consequently, the difference condition must describe "a difference for events logically or causally incompatible with P" (ibid). 'Not-P' covers a multitude of foils, and Lipton thought that the difference condition should specify the event which is absent in their causal histories whose presence would cause the occurrence of P. Telling Bob that the flagpole is 12m high because that was the height of the tallest tree in the timber wholesalers explains why the flagpole is 12m

rather than some greater height, but not why it is 12m rather than being less high than that. Lipton proposed that the difference maker is that event which is absent in the largest number of causal histories that are incompatible with P, and which is present in the causal history of P.[4]

3. Absences as difference makers

If we are to make the claim that absences are explanatory, then there are two things that we need to do:

(1) We must be able to make the case for absences to be difference makers.

(2) We must be able to delimit the number of absences which qualify as difference makers, in order to solve the many absences problem.

David Lewis approached this subject from a perspective which took both causation and causal explanation to be ultimately a matter of a certain kind of counterfactual dependence. In his view, absences enter into causal explanation via propositions which assert their occurrence (or obtaining, if you bridle at the suggestion that an absence can occur). It is clear enough that such propositions can figure in counterfactuals. Consequently, Lewis is receptive to there being both causation by absences and causal explanation in terms of absences. So while being generous (we would say overgenerous) towards both causation by absences and causal explanation in terms of absences, he was at the same time metaphysically deprecatory in his advocacy of explanation by absences, a view which he presented like this:

> "One reason for an aversion to causation by absences is that, if there is any of it at all, there is a lot of it — far more of it than we would normally want to mention. At this very moment we are being kept alive by an absence of nerve gas in the air we are breathing. The foe of causation by absences owes us an explanation of why we sometimes do say that an absence caused something. The friend of causation by absences owes us an explanation of why we sometimes refuse to say that an absence caused something, even when we have just the right pattern of dependence. I think the friend is much better able to pay his debt than the foe is to pay his. There are ever so many reasons why it might be inappropriate to say something true. It might be irrelevant to the conversation, it might convey a false hint, it might be known already to all concerned.... " (Lewis (2000, 196))

In our view Lewis's counterfactualist treatment of causation results in a position which is far too permissive about both causation by absences and explanation by absences. It must be simpler not to allow irrelevant absences to qualify as explanatory in the first place, rather than letting them all in and then hoping that they can be pruned back to those which are conversationally mentionable. So we think that our contrastive account does a much better job with respect to (2), delimiting the absences which qualify as causal.

But in order to secure this desirable result we first need to meet requirement (1), establishing that absences can be explanatory. As it currently stands, Lipton's formulation of the Difference Condition appears only to allow those events or states that are present in the causal history of the fact to be eligible difference makers. As we have seen, though, we do sometimes accept as explanatory the absence of an event in

the causal history of the fact which would have been present in the causal history of the foil. Daisy's plant died because she did not water it. The fact is Daisy's plant dying, and the foil is Daisy's plant staying alive. The difference maker will explain to us why the fact [*Daisy's plant dying*] occurred and the foil [*Daisy's plant staying alive*] did not. Daisy's failure to water the plant intuitively seems a good answer, but it is not clear that it fits into the Difference Condition as stated by Lipton. This is because the event of Daisy's watering the plant is one that is present in the causal history of the foil, but absent from the causal history of the fact.

It looks as if Lipton's Difference Condition only officially allows as difference makers those events or factors that are present in the causal history of the fact, and absent in the causal history of the foil. We will consider in the first instance a quite minimal amendment to Lipton's Difference Condition which will enable us to circumvent this apparent restriction to positive difference makers. The minimal revision would be to formulate the Difference Condition as follows:

> DC*: To explain why P rather than Q, we must cite a causal difference between P and not-Q, consisting of a cause of P and the absence of a corresponding event in the history of not-Q; *or we must cite a causal difference between P and not-Q consisting of the absence of an event in the history of P and the presence of a corresponding event in the causal history of not-Q.*

This revised difference condition, DC*, makes it clear that we can accept Daisy's failure to water the plants as explanatory. The event of Daisy's watering the plant is absent in the causal history of the plant dying, but it is present in the causal history of

the plant staying alive. Citing Daisy's omission therefore explains why the fact and not the foil occurred.

It would appear that DC* will work just as well for compatible contrasts as it does for incompatible ones. Imagine twin brothers, Roger and Giles, who both go to sea. Roger gets scurvy whilst Giles does not. This is an instance of a compatible contrast where we expect two similar situations to turn out the same — we expect either both of them to get scurvy or neither to do so. It then transpires that Giles has been eating fresh fruit and vegetables throughout the voyage, whereas Roger has not. Given this information, we can explain why Roger gets scurvy by reference to the absence of fresh fruit and vegetables from his diet. This is an explanatory difference maker under DC* because it is an event which is present in the causal history of the foil but absent from the causal history of the fact — and one which is plausibly critical as a difference-maker.

However, one might think that DC* is really only a footling and pedantic little amendment to Lipton's Difference Condition. Perhaps Lipton meant something like DC* anyway. Maybe we should not attach such importance to whether a difference is 'positive' or 'negative', since this might often be regarded as a trivial verbal matter. Thus: Did the fire spread throughout the whole forest because of the dryness of the undergrowth or the absence of wetness (failure of rain)? Was the accident due to the electrician's lack of experience or his short time in the job?

If we look at matters in a somewhat different perspective, however, a more significant way of framing an amendment should emerge. In general, the main point required to solve the many absences problem can most easily be seen by 'flipping' the fact and foil in some contrastive explanandum. If we can explain why P rather than Q in terms

of factor C (present in the causal history of P), then we should be able to explain why not-Q rather than P in terms of the *absence* of factor C in the causal history of not-Q.

Examples suggest we can do just that. So imagine a situation involving three people, X, Y, and Z. X and Y are on a beach, while Z is in the water and in obvious difficulties. X rushes into the water to assist, while Y remains on the beach. We might ask: 'Why did X plunge in rather than Y?'[5] Suppose the answer is that X is a strong swimmer and believes he can help, whereas Y is not and does not think he can do anything to assist in the water. Note that we could equally have posed the flipped contrast: 'Why did Y stay on the beach when X dived in to help?'. Inverting the explanandum in this way now requires explanation by absence: Y's *lack of confidence* that if he went into the water he would have been capable of doing anything useful.

Take another case, without attempting to specify the difference maker since we are not at all sure about what it is: 'Why did life evolve on Earth and not on Mars?' (another compatible contrast). Whatever the answer to this question is, we could also have asked 'Why did Mars remain lifeless while life evolved on Earth?'. The answers to these two questions must be related, even though we do not know whether the main factor to cite is a life-inducing Terran condition or a life-inhibiting Martian condition. Probably both sorts of condition are needed, so that in the case of complex difference-makers there can be mixed answers, including both positive factors and the absence of inhibitors.

We are now in a position to see why explanation in terms of absences and omissions is so common. For in principle whenever we can ask 'Why P rather than Q?' we can equally pose the explanatory inquiry 'Why not-Q rather than P?'. So potentially exactly fifty percent of all causal explanation is going to be negative causal

explanation, explanation in terms of absences or omissions. We can also see that there is something rather arbitrary about the asymmetry involved in the terminology of 'fact' and 'foil'. If explanation is contrastive, then it is the contrast that we are aiming to explain. That contrast is between what is indicated in Lipton's notation by 'P' and 'not-Q' — even though, confusingly, the foil in Lipton's terminology is not 'not-Q', but 'Q'. We need to be somewhat wary of Lipton's terminology of 'fact' and 'foil' because this burdens us with two problems: a tendency to obscure the point that the explanandum is actually a contrast rather than 'the fact' itself; and that contrastive explanations seek to explain propositions in terms of parts of their causal history — which is puzzling, since propositions are not the sorts of things we would normally suppose to have histories at all.

Instead we suggest that:

> *All contrastive explanations involve two differences: the target difference which is the explanandum, and the accounting difference cited in the explanans.*[6]

Here we are concerned with causal explanations and so the accounting relation is causation. In these cases we explain the contrast between one outcome and either another actual outcome (compatible contrast) or some merely possible outcome (incompatible contrast) by citing a difference between the causal history of the 'fact' outcome and the 'foil' outcome. When asking why Y stayed on the shore and X swam out to Z, the target difference (explanandum) is the contrast between Y staying on the shore and X swimming to the rescue. The accounting difference cited in the explanans is the relative aquatic confidence of X and Y: X is confident in the water whereas Y is not.

This way of formulating the requirements of contrastive explanation holds out genuine hope of solving the many absences problem, because it makes the invocation of an absence or an omission explanatorily — if not metaphysically — unmysterious. The explanans factor is going to be a difference between the causal history generating one outcome and that generating another outcome, with which it is being contrasted. *So that factor can just as readily be the absence of something present in the alternative causal history as the presence of something absent in the other causal history.*

Our formulation also makes it much clearer than Lipton's version of the Difference Condition does that there is a significant distinction between compatible and incompatible contrasts. In general there are two different causal histories in the case of compatible contrasts, since that is why they might conceivably have had similar outcomes, even though their actual outcomes are different in a way which is of explanatory interest. In the case of incompatible contrasts, however, there is only one actual causal history. So that actual causal history has to be compared with the merely possible causal history of some outcome which did not in fact occur. In order to make such a comparison, and locate the explanatory difference-maker, in the case of incompatible contrasts we therefore need some method for constructing the possible causal history of the unrealized possible foil outcome (call this 'incompatible foil history construction').

4. Solving the many absences problem

So it can be agreed intuitively, and also allowed by the contrastive model of explanation, that absences can be difference makers: i.e., that there can be differences

in outcome which are to be accounted for by absences. This is generally thought only to create a problem, 'the many absences problem'. Recall the way David Lewis put it:

> "One reason for an aversion to causation by absences is that, if there is any of it at all, there is a lot of it — far more of it than we would normally want to mention. At this very moment we are being kept alive by an absence of nerve gas in the air we are breathing." (Lewis (2000, 196))

The solution to this problem normally favoured has been to say that such claims are all true, but the great majority of them are, for one reason or another, unmentionable. They may seem strange and surprising statements. But since we have to accept that there are very many true statements which would be strange and surprising in any context in which we could imagine them being asserted, all these claims that something happened or is as it is because of an absence can be accepted as true, however little temptation there is to introduce them in any ordinary conversation. In a similar way Lewis thinks it is strictly true that a person's birth is a cause of his death, but for Gricean reasons we cannot decently say so: "The counterfactual dependence of his death on his birth is just too obvious to be worth mentioning." (Lewis (2000, 196)).

This is not our solution. Do we have to allow that: 'We are being kept alive at the moment because of the absence of nerve gas' is true by virtue of the fact that if nerve gas were introduced in suitable quantities, we would not stay alive? Our view is that in order to resolve such a question one must consider what the contrastive inquiry is, in a particular context. It is possible for a proposed absence to be the accounting difference, but it is not sufficient for this to be the case that a corresponding presence

would have resulted in a different outcome. Whether such a different outcome is relevant to the explanatory inquiry or not depends upon what the foil-outcome is.

The outline of our general solution to the many absences problem, then, is this:

- Some negative factor (an absence or omission) is to be cited in the causal explanation of a particular outcome when such a factor is the difference-maker in relation to the foil-outcome for that explanation, and when the presence of that factor is the explanans when fact and foil are flipped.

So, to apply this to one of the simple standard examples: Daisy's houseplant died because she neglected to water it. No need to mention that everyone else in the world neglected to water it too, because the assumed foil-outcome is the continued life of that houseplant with Daisy looking after things in her house without outside assistance. If Daisy had a domestic servant, then things would be different, the normal foil-outcome would exclude the assistance of other people, but not attention from her housekeeper. However, if it was understood that the housekeeper did the cleaning whereas the botanical and horticultural stuff was left as Daisy's proper concern, then it would still be the case that the houseplant died because Daisy failed to water it.

In general, therefore, an outcome may be 'causally attributed' to an absence or omission when the foil-outcome to be contrasted with that outcome has, or would have had, a causal history which differs in that the absent factor was present or the omitted action performed. We may, of course, be wrong in claiming that something happened because of an absence or omission. So we can confirm this account of how contrastive explanation solves the many absences problem by considering what would constitute evidence against such an attribution. Ideal evidence would be evidence that showed that, even when all other possibly relevant conditions were exactly the same,

making good the absence or omission would not produce the foil-outcome rather than the fact-outcome. A causal attribution to an absence or an omission can be refuted by showing that it fails the test of difference closure (Day and Botterill (2008)): make the causal history of the fact just like that of the foil and show that the foil-outcome does not result.

The difference closure test is clearly an appropriate way of checking on explanations in terms of absence or omission. The housekeeper admits he did not water Daisy's plant, but denies that it died because he did not water it. He points out that it had botrytis (because Daisy had been overwatering it for months). Plants with botrytis die anyway: it does not matter whether you water them or not. We suspect that Smith died (rather than surviving the expedition) because he had omitted to get inoculated. But our confidence in this explanation will at least be shaken if we learn that Jones, who had been inoculated, also perished.

So let us see whether our account can succeed in dealing satisfactorily with Lewis's suggestion that it is *strictly true* but *conversationally unmentionable* that we are staying alive because of the absence of nerve gas. In this instance, the contrastive inquiry would be posed by a question such as: 'Why are we staying alive?' Such interrogatives do not always make good explanatory inquiries. Without the assistance of some additional contextual information, it is quite unclear what the intended foil might be: i.e., 'Why are we staying alive rather than what?'

In the case of a compatible contrast, the foil is a dissimilar outcome in some case in which there is a distinct causal history: X's plunging into the sea, while Y stays on the beach; Smith dying of such and such a disease, while Jones survives, etc. In such cases it is a difference between the actual causal histories which should be cited as the

explanans, and such a difference may well consist in an absence in the causal history of the fact-outcome as compared with the foil-outcome. The interrogative 'Why are we staying alive?' can in some contexts be a question which poses a compatible explanatory inquiry. If so, it would usually have the emphasis 'Why are *we* staying alive?' So the foil-outcome is certain other people dying while we stay alive. Whether or not it is the absence of nerve gas which explains why we are staying alive in a compatible contrastive inquiry depends entirely upon what the people we are being contrasted with are dying from. If they are dying because of exposure to nerve gas, then we are staying alive because of the absence of nerve gas in our immediate environment – and not otherwise. So there are some contexts in which 'we are staying alive because of the absence of nerve gas' is both true and conversationally appropriate. It could also be conversationally appropriate *and false.* For if in a situation in which others are dying of nerve gas, we are actually immune to the gas for some reason, then it will be false. If we really are immune to the gas a difference closure test would reveal the falsity of the claim: our immunity would result in our surviving the introduction of nerve gas.

When dealing with an incompatible contrast, we do not have distinct causal histories: the causal history for the foil-outcome is to be constructed from the causal history it shares with the fact-outcome. This requires a determinate idea of the contrasted alternative outcome. For this reason, it almost always makes good sense to ask: 'Why did X die?', since the contrastive foil is provided by X's continuing to live in the way that he had lived up to that time. We observe that this point is the reason why it is so natural to suppose that *events* are the usual targets of explanation, where events are thought of as changes. The foil-outcome is supplied in such cases by such a change

not occurring: instead of the event occurring, things are projected to go on as they had before with minimal disturbance.

Everyone will agree, however, that in most contexts it will at least seem odd to say that we are staying alive because of the absence of nerve gas in here. The question is how to describe the way pragmatic considerations function to make this an odd thing to say. Our diagnosis is that the defectiveness of 'we are staying alive because of the absence of nerve gas' is due to the fact that 'Why are we staying alive rather than dying?' fails to produce, in most contexts, a determinate contrastive inquiry, because there are so many different ways in which we might die. So there is no clear target for explanation at all, unless we supplement 'Why are we staying alive?' in some way. It is not correct to suppose that the absence of nerve gas, the absence of carbon monoxide, the absence of assassins, the absence of an earthquake, the absence of volcanic eruptions, the absence of a massive meteor impact, etc., etc., are all equally correct answers to that inquiry. Perhaps for each of those there is *some* imaginable context, in which it would be the correct response to such a question. But we have not been given a context which fixes any particular foil-outcome. So there is no explanatory inquiry to control the invocation of the absence of any of the many factors which might change the status quo, as explanatory of that status quo.

There are some further complications affecting incompatible contrasts that deserve to be mentioned. These are connected with the fact that in the case of incompatible contrasts the foil-outcome is only an unrealized possibility and its causal history is at least in part a possible (rather than actual) causal history. Since the foil-outcome does not in fact occur, its occurrence would require at some point a branching away from actual causal history. So the question is: what controls the point at which this

branching is to be taken to occur? To illustrate this issue, consider a version of the Clover and the milk case. Clover does not put the milk back in the fridge, and the milk does indeed go off. In answer to the charge that the milk went off because of her omission, Clover points out that she was distracted. She would have put the milk back in the fridge, she always does. But that morning the phone rang with news of an interview for that job for which she had applied. This was exciting news and preparation for the impending interview was clearly the top priority for Clover. Thinking about that drove other thoughts out of her mind. Had she not got the call about the interview she would have remembered to put the milk back in the fridge. So what should we say about why the milk went off? It clearly is not wrong to say the milk went off because Clover did not put it back in the fridge. But it might be considered to be a better (though non-competing, and certainly not excluding) explanation to say that the milk went off because Clover received a call with important news. Not receiving such a call would have been the stem difference in an alternative causal history in which the milk is returned to the fridge and does not go off.

Here is another case which illuminates the construction of alternative possible causal histories. Suppose, happily, that we are not under any current threat of being exposed to nerve gas, nor is there any reason to compare us with other people who are being killed by nerve gas. That being so, it is not true that we are staying alive because of the absence of nerve gas. Suppose further, however, that a large meteor was falling towards the earth and came within a few degrees of descending on a path which would have impacted near to our location, with devastating consequences. Fortunately, its angle of descent was just a few degrees away from the fatal course and so it mostly burnt up in the atmosphere. Does the absence of a meteor impact near

us explain why we are still alive? We think it does, in that case. Even if we were blissfully unaware of the close shave, if we had asked 'Why are we still alive rather than having been violently killed just then?', the answer – whether we know it or not – is 'because a meteor did not impact the earth near to us'. This would seem to be because there is a close alternative possible history which branches in a contingently sensitive way from the actual causal history of our current organic existence. As in the Clover and the interview case, there is presumably also an earlier point of potential divergence which caused the meteor to burn up in the atmosphere rather than hitting the ground near us. So if we could only identify that we might regard it as a better explanation of why we are alive now.

5. Causation revisited

Although the focus of this paper has been firmly on the explanatory value of absences and omissions, we would like to offer a few concluding remarks on how the contrastive solution may affect our understanding of absences and omissions as causes. We are well aware that our account might seem to make it appear that the relation between an absence and an omission and the outcome it explains is only one of what Dowe has called 'quasi-causation' (Dowe 2001). For it might appear that whenever an absence or an omission is explanatory on our account, the genuine causation is operating via the alternative causal history of the foil-outcome.

This is a view favoured, in different ways, by both Dowe and Schaffer (Dowe 2001; Schaffer 2005). Dowe offers a counterfactual analysis of quasi-causation according to which not-A quasi-caused B if neither A nor not-B occurred and if, had A occurred, A would have caused B (quasi-causation by omission or absence).[7] Schaffer maintains that, while the cause-effect relation has traditionally been thought of as a binary

relation (*c* causes *e*), we would do better to see it as 'a *quaternary, contrastive* relation: *c* rather than ***C**** causes *e* rather than ***E****, where ***C**** and ***E**** are nonempty sets of contrast events.' (Schaffer 2005, p.327). He applies this quaternary contrastive account of causation to an impressive number of other problems, but also claims that '… the contrastive strategy locates the "oomph" in absence causation.' (p.331) His idea is that *c* rather than ***C**** can cause *e* rather than ***E**** in cases in which there is a chain of connections between ***C**** and ***E****, rather than between *c* and *e*.

It may appear that both Dowe's and Schaffer's theories could perfectly well be combined with the account we have given in terms of 'causal attribution' and explanations invoking absences and omissions. For it seems that on our account whenever a fact-outcome can be explained in terms of the absence of X this is because a contrasted foil-outcome either was or would have been caused by the presence of X. This, however, is not the view that we actually take. To explain our position on the issue of *causation* by absences and omissions would involve matters which we do intend to pursue elsewhere, but which are too lengthy to be discussed here.

6. Conclusion

To sum up, we have argued that by adapting the contrastive account of explanation we can see that absences and omissions can qualify as explanatory. Furthermore, this approach need not be overly permissive: it need not allow every absence of X to explain that P just in case there are some similar circumstances in which X would have resulted in not-P. This can claim to be a solution to the many absences problem, and moreover it is a solution which helps explain why there is *so much* explanatory attribution to absences and omissions. Our solution also complements prominent accounts of psychological explanation (for example, Hilton 1990), which highlight the

importance of implicit conversational constraints in everyday explanation giving. There are further important issues to be explored here regarding the psychological mechanisms which guide our choice of foil outcomes, as well as the prevalence (and success) of abductive reasoning in everyday situations (see Ahn and Kalish, 2000).

The amendments to the contrastive model of explanation which we have introduced also seem independently to be well motivated. There has seemed to be a significant difference between compatible and incompatible contrasts, and our amendment makes clear why this is so. We would also suggest that in general it is better to think of contrastive explanations targeting an explanandum which is the difference between two outcomes (outcomes we have here referred to as 'the fact-outcome' and 'the foil-outcome') rather than describing the explanatory task in terms of 'P's and 'Q's – items of dubious metaphysical status which need to be assigned causal histories. However, our arguments for the explanatory value of absences and omissions do not settle the question whether they are genuinely causes. That is an issue we must leave for discussion elsewhere.[8]

References

Ahn, W. K. (1995). The role of covariation versus mechanism information in causal attribution. *Cognition*, 54, 299-353.

Ahn, W., & Kalish, C. (2000). The role of mechanism beliefs in causal reasoning. In F. Keil, & R. Wilson (Eds.), *Explanation and Cognition* (pp. 199 - 225). Cambridge, MA: MIT. Press.

Beebee, H. (2004). Causing and nothingness. (In J.D. Collins, E.J. Hall, & L.A. Paul (Eds)., *Causation and Counterfactuals* (pp.291-308). Cambridge, MA: MIT Press.)

Choi, I., Nisbett, R. & Norenzayan, A. (1999). Causal attribution across cultures: Variation and universality. *Psychological Bulletin*, 125(1), 47-63

Day, M. & Botterill, G. (2008). Contrast, inference and scientific realism. *Synthèse*, 160, 249-267

Dowe, P. (2001). A counterfactual theory of prevention and 'causation' by omission. *Australasian Journal of Philosophy*, 79, 216-26

Garfinkel, A. (1981). *Forms of Explanation*. (New Haven and London: Yale University Press)

Hansson, B. (1974). Explanations — of what?. (Stanford and Lund: unpublished typescript)

Hempel, C.G (1965). *Aspects of Scientific Explanation*. (London and New York: Collier Macmillan)

Hilton, D. (1990). Conversational processes and causal explanation. *Psychological Bulletin,* 107, 65 - 81

Lewis, D. (2000). Causation as influence. *Journal of Philosophy*, 97, 182-97

Lewis, D. (2004). Void and object. (In J.D. Collins, E.J. Hall, & L.A. Paul (Eds.), *Causation and Counterfactuals* (pp.277-90). Cambridge, MA: MIT Press.)

Lipton, P. (1990). Contrastive explanation. (In D. Knowles (Ed.), *Explanation and Its Limits* (pp.247-266). Cambridge: Cambridge University Press.)

Lipton, P. (1991; 2nd edn. 2004). *Inference to the Best Explanation*. (London and New York: Routledge)

Schaffer, J. (2005). Contrastive causation. *Philosophical Review*, 114, 327-58

van Fraassen, B.C. (1980). *The Scientific Image*. (Oxford: Clarendon Press)

---

[1] Trials on differences in causal cognition between East Asians and Westerners, such as Choi et al. (1999), provide examples of classification by causal attribution. A contrastive approach to explanation makes it tempting to account for these differences in terms of cultural priming for different explananda.

[2] There are cases where, given that the laws are well known and deterministic, a deductive derivation may be linked to a contrastive explanation. So, for example, we can explain why a planetary orbit is nearly circular rather than markedly elliptical, in terms of the absence of some force that would have resulted in a more elliptical orbit. This would appear to support the view we defend here.

[3] Notably Hansson (1974), van Fraassen (1980), Garfinkel (1981), and Lipton (1990, 1991).

[4] Lipton points out that one does not need to give a difference that applies to the causal histories of all incompatible foils, because there is an indefinite number of these. One does not need to show why, for example, the flagpole is 12m high rather than being a watermelon. The causal histories against which the fact's causal history is contrasted are only those which are sufficiently similar to that of the fact.

[5] This is a compatible contrast, since they could both have dived in. If they had made a quick contract that one should stay out, it would be an incompatible contrast.

[6] While we are here particularly concerned with causal explanations, we are also mindful that the account provided should cohere with the general features of explanation, causal or not. Our view on this, as defended elsewhere, is expressed in the following general difference condition:

> *GDC: To explain why is to cite a difference which can resolve the target difference relative to some accounting relation.*

[7] There are some further complications in Dowe's account involving the possibility of prevention. We agree that it is an elegant feature of Dowe's theory that it can give a related treatment of both quasi-causation by omissions and absences, and also cases of prevention (cases where it is the effect rather than the putative cause that is something that did not occur).

[8] The authors would like to acknowledge helpful comments on earlier drafts from members of the audience in the Philosophy Departmental Seminars at the University of Nottingham, and at the University of Sheffield; from Dr. Robin Scaife; and from two anonymous reviewers.